

REMARKS

Claims 1, 5-13, 16-18, and 38-50 remain in the application for further prosecution. Claims 2-4, 14-15 and 19-25 have been cancelled. New Claims 38-50 have been added. Claims 26-37 have been withdrawn from consideration as the result of a restriction requirement. The provisional election of Claims 1-25 for prosecution is affirmed, but reconsideration is requested. The Examiner reasoned that Claims 26-37 have separate utility for analyzing multiple components by using multiple sample wells. The device of Claims 26-37 has additional wells, as illustrated in Fig. 5. The device described is much like the device of Claims 1-25, except that multiple paths similar to Fig. 4a are used. The search needed for Claims 1-25 should have included multiple devices in a single disc, as shown in U.S. 6,063,589, which the Examiner has cited. Note the statement at column 10, lines 16-21, where one or multiple assays could be accommodated in a single disc. Accordingly, it is believed that the distinction is not sufficient to justify restricting the claims and requiring the additional costs for a divisional application.

Claims 1-25 were rejected under 35 U.S.C. 102(b) as anticipated by Kellogg et al. ("Kellogg"). As amended above, the claims are believed to distinguish the Kellogg reference and therefore the claims should not be anticipated. In contrast with the Kellogg systems, which rely on the stepwise use of centrifugal force to move liquids but teach that various methods may be used to prevent flow, the present invention is now claimed to use hydrophilic passageways to facilitate flow, while either hydrophilic stops (e.g. Claim 1) or hydrophobic stops (e.g. Claim 38) can be used to prevent flow.

The Kellogg patent describes a microfluidic system that requires the use of centrifugal force to move a liquid through a series of chambers connected by capillaries. The system is intended to be part of a disc, as shown in Fig. 1. Figs. 3A-3J, described at column 10, line 9 to column 13, line 17, appear to be the closest to the present invention. They illustrate the procedure used by Kellogg. It will be seen the Kellogg patent does not anticipate the invention as now claimed.

In Fig. 3A a sample of fluid is added to 201 and, as shown in Fig. 3B, with no centrifugal force, the liquid only migrates partly into the group of metering capillaries 202 and the overflow capillary 203. In contrast, the Applicant's system uses only capillary action to fill the segment that defines the amount of the liquid sample. Kellogg's system requires rotating at about 175

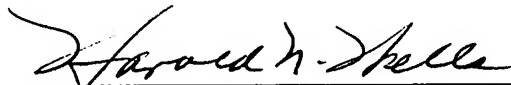
rpm to fill the metering capillaries and to empty the inlet well 201 into the overflow chamber 205, as shown in Fig. 3C-D. In contrast, the Applicant's system includes no overflow chamber and does not rely on centrifugal force to fill the metering segment. Kellogg then increases the rotational speed to 400-500 rpm in order to empty the metering capillaries 202 into chamber 204 and then into holding chamber 207, as shown in Fig. 3E-H. In contrast, the Applicant's system only has to overcome the resistance of their capillary stop to move the liquid into a reaction chamber, which could, but need not, be done with centrifugal force. There would be an advantage to overcoming the resistance of the hydrophilic stop by other means (see page 7, lines 6-10), since using centrifugal force requires precise control of the speed of rotation. As shown in Fig. 3H, a sacrificial valve 213 could be used to prevent liquid from leaving the holding chamber 207. No such sacrificial valve is used in the Applicant's system. In the alternative mentioned at column 13, lines 1-17, no sacrificial valve is used, but a capillary junction 209 prevents liquid from flowing into the reaction chamber 210. This resistance is overcome by increasing the rotational speed to 500-800 rpm, as shown in Fig. 3I-J.

As has been shown, the present invention as now claimed does not rely on centrifugal force to move liquids and therefore cannot be said to be anticipated by the Kellogg patent.

A check for \$308.00 is enclosed for fees due for a one month extension of time and IDS, and aⁿ added claim. Should any additional fees be required (except for payment of the issue fee), the Commissioner is authorized to deduct the fees from Jenkins & Gilchrist, P.C. Deposit Account No. 10-0447, Order No. 47082-00033.

Respectfully submitted,

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Date


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